

Application Serial No. 10/500,814
Reply to Office Action of April 2, 2009

PATENT
Docket: CU-3809

traverses these rejections.

It is first noted that the present application claims priority to Swedish Application No. 0200089-1, which was filed on January 15, 2002. This pre-dates the October 25, 2002 filing date of Tom. Nevertheless, the Applicant considers that Tom does not anticipate Claims 1-5 and 20-29.

Present Claim 1 requires that the transmitter element is for generating a focused ultrasonic field for treatment of an object. The temperature focus of the generated ultrasonic field is located in the object for heating thereof.

The Office Action refers to element 202 of fig. 2 in US 2003/0130657. This element is a transducer assembly. However, the transducer assembly 202 is not described as emitting a focused ultrasonic field for heating of an object.

In general, the device described in Tom is intended for creating channels through an airway wall of lung tissue (see para. [0124]). To this end, the device is advanced to a possible site at which a channel is to be created. The device then detects the presence or absence of blood vessels at the site by means of Doppler ultrasound (para. [0125]). If no blood vessels are detected, the device creates a channel by means of RF energy emitted from the tip of the device (para. [0125]).

In particular, the ultrasound assembly 202 is only described as a Doppler ultrasound device for the detection of blood vessels within the tissue in front of the device (see para. [0063], para. [0065]). Hence, the transducer assembly 202 is not for heating of any object but merely for the detection of blood vessels prior to a heat treatment. The subsequent heating is performed by means of a separate tip 204 which functions as an RF electrode. The tip is also described as functioning as a lens for the ultrasound emitted by the transducer assembly 202 during the initial detection of blood vessels prior to heating. However, the tip does not focus ultrasound into an object in front of the device. On the contrary, Tom teaches away from such a focusing as the tip 204 is described as being arranged to disperse and/or direct a signal over a substantial portion of the outer surface of the tip, so as to detect vessels through a greater range of contact angles (para. [0073]).

Hence, the transducer 202 of fig. 2b is not arranged for transmitting a focused ultrasonic field for heating of the tissue, but merely for detecting blood vessels by

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means of Doppler ultrasound. The tissue removal is performed subsequently by means of RF energy applied by the tip 204 (see also fig. 9 and paragraphs [0124]-[0126]).

Even though there is a general comment in para. [0067] that it is contemplated that the openings in the tissue may also be created by focused ultrasound, this comment does not provide any specific disclosure of how this may be achieved, let alone that this should be performed by the Doppler ultrasound transducer assembly 202 rather than by replacing the RF tip with a treatment ultrasound transducer.

Present Claim 1 further requires that the front portion is thermally insulating, whereby the transmitter element does not heat, or substantially not heat, the front portion. This avoids heating of tissue in the area in front of the tip between the tip and the temperature focus (e.g. in order to provide a local temperature increase in nucleus pulposus without overheating the surrounding annulus fibrosus, see page 4, lines 8-18 of the PCT publication). However, the device of Tom is for creating channels in the tissue, i.e. a removal by heat of the tissue directly in front of the tip is exactly what is desired. Accordingly, the heat insulating layer 264 described in para. [0072] is shown in figure 2D to cover the lateral surface of the device. Furthermore, this layer is described as protecting the tissue and the transducer assembly against heat, namely the heat generated by the tip, rather than protecting the tissue against heat generated by the transducer assembly. Therefore, even if a skilled person was to replace the RF tip 204 with an ultrasound emitting tip, it would not be obvious to move such a unit away from the tip closer to the ultrasound assembly 202. On the contrary, Tom teaches away from such an arrangement, as it describes the separation between the Doppler ultrasound transducer 202 and the heat generating tip 204 as described for protecting the transducer assembly 202 against damage due to heat (para. [0065])

For the above reasons, we consider that Claims 1-5 and 20-29 are not anticipated by Tom, and likewise the dependent Claims 6-19 are not obvious in view of Tom and the other cited references.

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In light of the foregoing response, all the outstanding objections and rejections are considered overcome. Applicant respectfully submits that this application should now be in condition for allowance and respectfully requests favorable consideration.

Respectfully submitted,

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Date



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